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ABSTRACT

A study applied the phenomenographic method in sloyd educational research to determine students' conceptions of sloyd in the comprehensive school. Sloyd, derived from a Swedish word, is an umbrella term for making or crafting things by hand. The sloyd educational paradigm based on Lindfors' system model showed sloyd activity as a process that takes place in a network where all parts influence each other. Most research on sloyd education had focused on influences from the world of culture and nature. The phenomenographic research method explored people's conceptions of, not their opinions about, a phenomenon. Since children's drawings were used as research material, five theories on children's development in drawing were examined: personality, repetition, cognitive development, perceptual development, and cultural. Data collection consisted of asking 20 third graders to draw a picture of someone working on a sloyd product. Drawings were analyzed and categorized. They were also described using the division of worlds according to Lindfors' systems model. Results from the empirical study showed students had four qualitatively different conceptions of sloyd, varying from conceiving sloyd as a comprehensive activity to conceiving sloyd as a narrow activity where only the raw materials and tools interact. Applying the phenomenographic method in sloyd education proved to be very positive as did using drawings as research material. (Contains 25 references and 11 figures.) (YLB)

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Department of Teacher Education

Craft Education in the Cultural Struggle
Part V

Students' conceptions of sloyd in the comprehensive school
An attempt to apply the phenomenographic method in research on sloyd education

Mia Porko

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Mia Porko

Craft Education in the Cultural Struggle. Part V. Students´ conceptions of sloyd in the comprehensive school. An attempt to apply the phenomenographic method in research on sloyd education.

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Abstract

The aim of this study is to try out the possibilties of applying the phenomenographic method in sloyd educational research, and to find out students´ conceptions of sloyd in the comprehensive school by using the phenomenographic method. Since phenomenography has not been applied in sloyd educational research to any larger extent, both phenomenography and the prevailing sloyd educational paradigm at Åbo Akademi University in Vasa are presented. The empirical research is done by using drawings as research material. Twenty third-graders in a comprehensive school in Ostrobothnia wer asked to draw pictures of someone who is working on a sloyd product. The drawings were analysed and categorized. They were also desribed by aid of the division of worlds according to Linnéa Lindfors´ systems model of sloyd or craft activity. The results from the empirical study show that students in the third grade have four qualitatively different conceptions of sloyd. The conceptions vary from conceiving sloyd as a comprehensive activity to conceiving sloyd as a narrow activity where only the raw materials and the tools interact. The experience from applying the phenomenographic method in sloyd education has proved to be very positive and so has the use of drawings as research material.

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Åbo Akademi
Pedagogiska fakulteten
Institutionen för lärarutbildning

Rapport nr 2 1997

Mia Porko

Slöjdfostran i kulturkampen. Del V. Elevers uppfattningar om slöjd i grundskolan. Ett försök att tillämpa den fenomenografiska metoden i slöjdpedagogisk forskning
62 s., 1 bilaga

Abstrakt

Studiens syfte är att utröna på vilket sätt den fenomenografiska metoden kan användas i slöjdpedagogisk forskning samt att genom att tillämpa fenomenografi undersöka elevers uppfattningar av slöjd i grundskolan. Eftersom fenomenografi inte tidigare i större utsträckning har använts inom slöjdpedagogisk forskning, presenteras både fenomenografi och det rådande slöjdpedagogiska paradigmet vid Åbo Akademi i Vasa. Den empiriska undersökningen har gjorts med hjälp av teckningar som datamaterial. Sammanlagt 20 tredjeklassister i en skola i Österbotten ombads att rita en teckning som visar när någon slöjdar. Teckningarna har analyserats och kategoriserats. Vidare har de beskrivits med hjälp av indelningen i världar enligt Linnéa Lindfors´ helhetsmodell för slöjd som verksamhetssystem. Resultaten från den empiriska undersökningen visar att elever i årskurs 3 har fyra kvalitativt olika uppfattningar av slöjd. Uppfattningarna varierar från att se slöjd som en helhetsorganiserande verksamhet till att se slöjd som en snäv aktivitet där endast råmaterialen och redskapen agerar. Erfarenheterna från att tillämpa den fenomenografiska metoden i slöjdpedagogisk forskning har visat sig vara mycket positiva liksom också användningen av teckningar som datamaterial.

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Preface

The process of writing this report, which is based upon my minor subject dissertation in sloyd education, has taught me many valuable things about doing research. It has opened my eyes for a new way of doing research as well as deepened my insight into the versatile area of the science of sloyd education.

Part of this report has earlier been published as an article in the Techne Series proceedings B:2/1996. I am however grateful to my supervisor Associate Professor Linnéa Lindfors who encouraged me to develop the article into this report. The report constitutes the fifth published part of the research project *Craft Education in the Cultural Struggle* at Åbo Akademi University in Vaasa/Vasa.

My aim in writing in English is to contribute to the small amount of sloyd educational literature that can be found in other than the Nordic languages. As sloyd education and crafts science expand to reach outside the Nordic countries, reports in English and other world languages will be in great demand. I hope that this report will find its way to people who would not have been able to read it if it had been in Swedish. I would also like to thank Rolf Lindholm who has checked my text and made it possible to publish the report in English.

Vaasa/Vasa in March 1997

Mia Porko

1 Introduction

1.1 Background to the terms in the study

One of the first problems that I faced when I began writing this minor subject dissertation was the variety of terms in English for the activity that the study would deal with. The making of things from raw material with your hands, or using tools, has in English usually been called *craft*, *handicraft*, *art* or *design*. The use of different terms for describing the above-mentioned activity has caused some problems as the terms have different meanings in different cultures. Anna-Marja Ihatsu (1996) has analyzed the concept of craft in British culture, and has tried to find a rough basic definition of the concept.

The researchers in the network that is subordinated to *The Nordic Forum for Research and Development in Craft and Design, NordFo*, discussed the use of the different terms for the activity, and decided to launch the word *sloyd* as an umbrella term for different educational crafts whose scientific basis is to be found in Sloyd (or Crafts) Education and Crafts Science[1]. In this study I have decided to use the word *sloyd* for the activity in question. Sloyd derives from the Swedish word *slöjd* which originally means smart, skilful, ingenious (Eriksson, 1979, p. 6). Also the academic discipline that deals with sloyd and education is in English called sloyd education.

[1]The presentation of the term can be found on the cover of all English reports that are published in the *Techne Series*.

1.2. Theoretical background

Sloyd as a subject in the comprehensive school can be divided into two areas – textiles and technical sloyd. Both boys and girls are taught sloyd in equal degree, but in reality the students have to choose which area they want to specialize in. Sloyd is often seen by other teachers and decision-makers as a relaxing activity that deviates from the theoretical subjects at school. Seldom do others fully understand the possibilities that educative sloyd provides or the reasons why sloyd is a subject that develops all sides of one´s personality. There are many different views on sloyd and many people have strong feelings about and memories regarding their own sloyd education at school. Even though sloyd has been a subject in Finnish schools since the early days of a regular education for children, sloyd has not been an academic subject in the universities for a very long time.

Sloyd education as a *main subject* is fairly recent at Åbo Akademi University. It has only been in the university´s program since 1995. Research in the field at Åbo Akademi University has been carried on since the 1980´s, but there is still much work and research to be done in order to strengthen the sloyd educational paradigm.

Sloyd educational research has so far concentrated on clarifying the relations between the elements in the complex system of sloyd in an educational context. The research methods that have been used for summarizing data are, among others, soft systems methodology in combination with the Grounded-Theory method (Lindfors, 1992; Malmberg, 1995) and content analysis (Malmberg-Tulonen, 1995). Research has given us a picture of what sloyd in an educational context is like and has given rise to models and theories concerning the subject in question.

After having taken part in a course on qualitative research methods, I got interested in phenomenography as a research method. This research method involves a special way of looking at man in the world and concentrates on people´s conceptions of different phenomena. Since sloyd is an activity that, among other things, deals with knowledge, skills, and feelings, I got interested in finding out more about how people

conceive these different parts of sloyd. To be able to do this, I had to find out more about phenomenography and see if this method could be used in sloyd educational research.

In sloyd education or crafts science not much research has been done so far on students´ conceptions of sloyd. A couple of studies have, however, been made where students´ opinions of sloyd have been in focus. Malmberg-Tulonen has made a study in which she asked students in the seventh, eighth and ninth grades about their opinions of the importance of sloyd in the comprehensive school in Finland (Malmberg-Tulonen, 1995). Also the national evaluation of the comprehensive school in Sweden has given us a picture of how students in the ninth grade conceive sloyd (The Swedish Board of Education, 1994).

In many studies (Lindfors, 1991; Malmberg, 1995) it has become clear that the environment influences the sloyd process in the comprehensive school. The influence derives from the curricula, the school atmosphere, the learning situation, material and economic resources, the teacher, other students, parents and so on. These influences come from "the outside". It has also been shown that the student´s own abilities and qualifications influence her work (Lindfors, 1991, p. 51). This can be called influences from "the inside". Because of these influences, I believe that students´ conceptions of sloyd also influences the sloyd process and learning, and therefore it would be relevant to develop a scientific theory about this aspect.

1.3 The aims and problems of the study

The main aim of this study is twofold. Firstly its aim is to ascertain the possibilities of applying the phenomenographic method in sloyd educational research, and secondly its aim is to study students´ conceptions of sloyd in the comprehensive school by applying the phenomenographic method. Since the combination of sloyd education and phenomenography is relatively new, both areas are presented before the presentation of the empirical part.

Sloyd education at Åbo Akademi University has developed its own paradigm, which is based upon systems thinking and soft systems methodology. Phenomenography on the other hand is a much discussed research method, which involves a special way of looking at man in the world. The aim of this study is therefore to present the current sloyd educational paradigm that prevails at Åbo Akademi University in Vasa and to discuss, and through an empirical study show, how phenomenography could be used in sloyd educational research to shed more light on the versatile area that educative sloyd constitutes. Since the empirical study is done by using drawings as research material, I will also present some theories on children´s drawing development and present a few studies where drawings have been used as research material.

The main problem concerning the use of phenomenography in sloyd educational research is *how the method can be used in sloyd educational research*. The problem has to do with the nature of educational sloyd, which derives from the speciality of sloyd, which is the making of things from raw material and learning through the process. *The question is how conceptions of a phenomena that includes a process, a product which is made during the process, and learning that derives from the process and the product can be studied.*

The other main problem is connected with the empirical study and the use of drawings as research material. The problems can be summed up as follows:

1. How can drawings be used in order to find out conceptions of an area as wide and versatile as sloyd?
2. What is the question you should ask in order to get as many qualitatively different conceptions of sloyd as possible?
3. How should the drawings be categorized and how can scientific knowledge about sloyd be found in drawings?
4. Is it possible to find out students´ conceptions of sloyd through drawings and what conceptions do the students have?

2 Sloyd education at Åbo Akademi University in Vasa

The sloyd educational paradigm at Åbo Akademi University has been developed and deepened by Associate Professor Linnéa Lindfors, Ed.D. and Eva Malmberg-Tulonen, Ed.D. In this chapter I will present the paradigm mainly based on Lindfors´ doctoral dissertation (Lindfors, 1992). Furthermore, I will present some of the research that has been conducted according to the paradigm.

2.1 The sloyd educational paradigm

As mentioned earlier, the sloyd educational paradigm is based on systems thinking and the use of soft systems methodology. With systems thinking one can apprehend parts and wholes in hierarchic systems in dynamic and evolutional interaction. According to soft systems methodology there are different classes of systems: 1) *natural systems*, for example man himself, 2) *designed physical systems*, for example tools of different kinds, 3) *designed abstract systems*, for example rules and work plans, 4) *human activity systems*, human actions for producing physical and abstract systems, and finally 5) *transcendental systems*, systems which one cannot apprehend in reality and which are beyond knowledge.

Systems thinking results in an abstract way of seeing differences in what is an integral part of a system, for example persons, tools and materials, and what proceeds in the system, for example a person that is working

with some material. One can say that what is an integral part of a system is static while what proceeds in the system is dynamic. The dynamic aspect of a situation is seen through the relation between the structure, for example the sloyd product that is made, and the process, what the student does to finish her sloyd product. In sloyd education there are also human activities and intentions which are definied as teleological activities.

According to the paradigm, all sloyd activities are total actions with a system structure. Central concepts of the paradigm are *system* (= the whole), *elements* (= parts), *structure, hierarchy, relation, function,* and *information.*

Sloyd activities thus constitute a system, a whole, that consists of parts or elements. An element can for example be a quality, a phenomenon or an idea. The elements should be related to one another in such a way that a meaningful and characteristic whole is attained. A relation can be defined as an interdependent relation between elements, for example the work object´s relation to tools and the student in a given work phase. The student constitutes a superior element in the system. Elements such as the work object and tools are elements in a subsystem in relation to the student.

Different systems can be separated from each other on the basis of their structure. The structure arises from the relation between the elements. The sloyd activities are an integral part of society, which in turn is a complex superior system. Several systems together are hiarchically built since the systems are located on different levels. Systematic changes in the relations between the elements are brought about through functions. Sloyd actions are directed and influenced by different kinds of information both from within the system and from the surrounding system.

The sloyd educational paradigm assumes that sloyd activities, in general, are goal oriented, and that sloyd actions always derive from a formal motive-result ideal which is carried out in the material.

Lindfors´ systems model of holistic sloyd or craft activity (Figure 1), shows how sloyd activities can be apprehended in a larger whole, where, besides the student and her actions, the world of social aspects, the students´ closest environment, and the world of culture and nature, the community outside the sloyd activity, can also be seen as influencing the sloyd process. The model thus shows that the activity is dynamic.

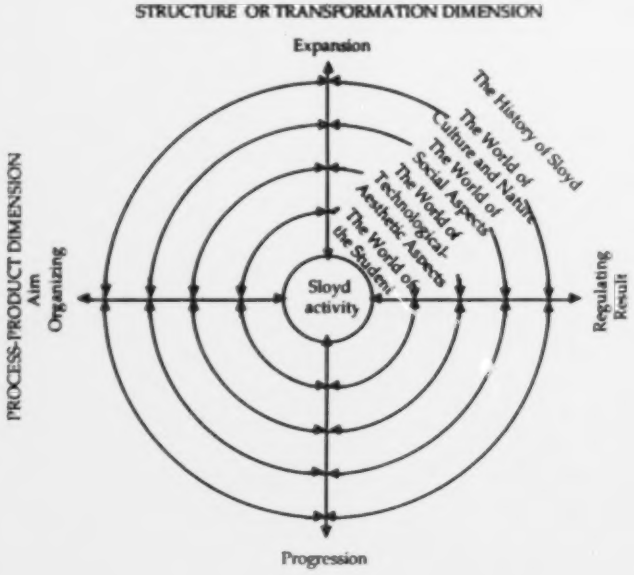

Figure 1.
Lindfors´ systems model of sloyd or craft activity (Lindfors 1991a, p. 22).

The systems model of holistic sloyd or craft activity emanates from the core of all sloyd activities. The core of sloyd activity presents two aspects: 1) the individually related aspect of sloyd activity, which is called the world of the student, and 2) the sloyd-technological activity aspect, which includes aesthetical components and is called the world of technological-aesthetic aspects. The cover of sloyd activities and educative activities consists of 3) the social world, which is called the

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world of social aspects, and 4) environment-related aspects, the world of culture and nature. The three outer worlds are in constant relation to one another in all human activities. In sloyd activity the inner world consists of the student and sloyd´s own technological-aesthetic component. The inner world interacts with the world of social aspects for example in the teaching process, and the world of culture and nature. The ontological essence of sloyd consists, according to this systems model, of sloyd technologically-aesthetically entailed unique sloyd actions in sloyd materials through which sloyd products are produced within the whole that the core, cover and history of the subject field presents.

Lindfors´ systems model consists of worlds including all sloyd activities and educative aspects of sloyd (Lindfors, 1996). The model is based on Karl Popper´s idea of man´s conscious interaction with systems around him which takes the form of communication networks. In this sense also sloyd activity is a process that takes place in a network where all parts influence each other. For example, sloyd activities that take place in school are influenced, besides by the students´ own knowledge, skills and feelings, also by the world of technological-aesthetic aspects through sloyd materials and different production techniques, by the world of social aspects through the teacher, class-mates, material resources and surroundings. They are also influenced by the world of culture and nature through curricula, economic resources, parents etc. The different worlds can influence the activity in an organizing – regulating – progressive – expanding way (Lindfors, 1991a, pp. 21-24).

2.2 Sloyd educational research

Most of the research in the field of sloyd education at Åbo Akademi University has been done by Linnéa Lindfors, Eva Malmberg-Tulonen and Christina Nygren-Landgärds (1996). I have chosen to limit the presentation of sloyd-educational research to the part of Malmberg´s doctor´s thesis (Malmberg, 1995) where she discusses influences from the world of culture and nature and from the world of social aspects on sloyd in the comprehensive school. She has used the above-mentioned model of holistic sloyd or craft activity as a frame of reference. This part

of her thesis is very interesting as it clearly deals with conceptions and interpretations.

In order to clarify the influence of the world of culture and nature on sloyd in the comprehensive school, Malmberg has looked at the curriculum. She has taken into consideration the curriculum of 1985, as well as earlier curricula, since they are still, through the teacher, influencing teaching in the 1990´s. Malmberg says that although the goals are mentioned in the curriculum, this is no guarantee that they are implemented in the actual teaching. Furthermore she says that the information in the curriculum is interpreted individually by every teacher and that this is one of the reasons why qualitative differences appear in the way the teachers conform to the norms. The students for their part get information about the curriculum through the teachers´ actions in teaching situations. In this way the students then form their own conceptions of the activities and work in the school. The design of the teaching situation is influenced by both the teacher´s and the students´ conceptions. Malmberg says that the second curriculum level, the curriculum that is to be implemented, is marked by the teacher´s view of society, of man, of teaching and learning as well as by the teacher´s own abilities, interests and didactic proficiency .

Due to the fact that the curricula in Finland are nowadays to a large extent planned by the teachers at the schools, the teachers also influence the teaching in an individual way. The goals mentioned in the curricula can be understood in many different ways. Malmberg says that the teacher can influence the students´ learning by varying the task areas and the main emphasis within the task areas (Malmberg, 1995, pp. 44-47).

In studying the influence of the world of social aspects on the students´ learning, Malmberg has concentrated on the interaction between the teacher and the student in a supervisory situation. She says that when the teacher and the student meet in a supervisory situation they adapt themselves to certain roles, the teacher to the teacher´s role and the student to the student´s role. These roles are partly socio-culturally determined and partly formed little by little during the teaching situation. Malmberg also writes about internalization in the sense that

the teacher and the student incorporate external conceptions and expectations. This internalization happens most often unconsciously. Malmberg says that the student´s conception of both the student´s and the teacher´s role, as well as the expectation that the teacher mediates through her actions, influence the student´s adaptation to different situations in the sloyd activity. Malmberg compares the situation to the relation between master and novice, and says that it is difficult to know for sure how great the teacher´s influence is on the student, since much of the knowledge that the student creates is silent (Malmberg, 1995, p. 101).

The situation in the classroom is affected by norms, roles and assessments which in turn affect the social relations between students as well as between the students and the teacher. They also affect the work performance. According to the results of Malmberg´s research one can therefore say that a great many of the aspects of the world of culture and nature, and of the world of social aspects influence teaching through the teacher´s conceptions and personality.

3 Phenomenography – research in conceptions

My aim in this chapter is to present the main idea of phenomenography and to highlight aspects that I think will show why this method could be used in sloyd education. There is a lot written about phenomenography and a lot of educational research done applying the method (Myrskog, 1993; Heilä-Ylikallio, 1994; Eklund-Myrskog, 1996). I have chosen to present phenomenography mainly as explained by Michael Uljens (1989) and Ference Marton (1981). The presentation is to be seen as an introduction to phenomenography and as a basis for the study where I have applied the method in sloyd education, and it therefore does not include a detailed description of all the stages of phenomenographic research.

3.1 The phenomenographic research method

Phenomenography implies a special way of looking at man in the world. There are two different perspectives from which phenomena in the world can be viewed, a *first-order* and a *second-order* perspective. In the first-order perspective the researcher describes different aspects or phenomena in the environment. In the second-order perspective interest is concentrated on how other people conceive elements and phenomena in the environment. Phenomenographic research emanates from the second-order perspective. By using phenomenography, researchers strive to explain, analyze and understand people´s conceptions of different phenomena in the world (Marton, 1981, p. 177).

As an example of the different perspectives, Uljens refers to Marton´s research on children´s success at school. According to the first-order perspective one could ask why children´s success at school varies. According to the second-order perspective one could ask a certain group of people what they think are the reasons why children´s success at school varies. Marton says that there are at least two reasons that make it interesting to ask the second type of question. He says that it is interesting because of the educational potential that it holds and that, through our knowledge of how a certain group of people understand different phenomena in their environment, it becomes easier for us to teach them. The second reason why this type of question is interesting is that the results that you get are independent because they cannot be derived from results from research that has been done within the first-order perspective. Because of this, the results that you get by asking questions in terms of the second-order perspective have an undeniable value in themselves that cannot be replaced by any other type of questions (Uljens, 1989, pp. 13-16; Marton, 1981, p. 178).

The central term in phenomenographic research is *conception*. In everyday use the word has almost the same meaning as opinion, one has an opinion about something. In phenomenography the word has another meaning. It means that a person has a conception *of* a phenomenon. Phenomenographers are interested in people´s conceptions *of* a phenomenon, not in their conceptions or opinions *about* a phenomenon. A person´s conception *of* a phenomenon refers to her basic understanding of the phenomenon concerned, while when talking about a conception/an opinion *about* a phenomenon, it means that one takes something into consideration and assesses it.

Uljens says that conception is concerned with distinguishing how different phenomena are related to a whole. Phenomenographic research is therefore aimed at studying how parts/elements are organised as a whole. In this respect phenomenography and soft systems methodology are very similar. Uljens refers to Svensson, who has said that what at one time may be a whole can at another time be an element; what decides this is how you delimit the whole concerned. When you concentrate on studying people´s conceptions, you make a distinction between conceiving them as a process and conceiving them as

a phenomenon. You also make a distinction between *what something is* and *what something is conceived to be*. According to Uljens it is impossible to talk about conceptions without substance, it is always something that is conceived. Furthermore this something is always conceived in a certain way or as something (Uljens, 1989, p. 13).

If you think about the sloyd educational research that has been carried out so far, you can say that it has concentrated on analyzing *what sloyd is*. Both Lindfors (1992) and Malmberg (1995a) have clarified different aspects of educational sloyd and built theories of fundamental importance for the didactic thinking in sloyd education. They have searched for the ontological starting points and the research results have consisted in describing what sloyd seems to be. They have not been interested in finding out other people´s qualitatively different conceptions of sloyd. By using phenomenography we could get an answer to the question *what sloyd is conceived to be*. This would represent a different angle of looking at sloyd, and the new kind of knowledge that we would get would broaden the sloyd educational field and provide valuable information for further development work.

Uljens continues by saying that what you conceive can also be distinguished with respect to thoughts that have a meaning and a physical object, and thoughts that have a meaning but not a physical object. He gives an example of this by referring to real elephants and pink elephants that do not exist in reality, and says that in both cases there is content in the thought but that the latter lacks a physical object. In order to distinguish these phenomena Uljens has divided them into so-called *primary* and *secondary phenomena*. He points out that the division in no way represents an order of precedence but that it should be regarded as a research-technical differentiation.

By primary phenomena Uljens refers to phenomena that are in some way delimited either socially, psychologically or physically. Primary phenomena are also phenomena that are tangible in some way, and that have a built-in intentional meaning. Examples of primary phenomena are an object, a picture or a text. Uljens also says that you can experience a primary phenomenon several times without the

phenomenon changing. What can change is how you conceive the phenomenon. Furthermore, he says that you can make a distinction between phenomena that have a clear substance or meaning and those that lack it.

Secondary phenomena are phenomena that the researcher from the point of view of content cannot delimit in advance. Examples of secondary phenomena are phenomena in education such as teaching-knowledge, learning, social climate, socialization and upbringing. Uljens says that these examples are phenomena that are constituted through social reality, and that they are at the same time significant for different kinds of human activity. Further he says that when you study conceptions of so-called secondary phenomena, you can capture the essence of the conceptions of a certain group of people, but you cannot relate these conceptions to any predestinated content since the group of people you study have not encountered or taken part in the same phenomenon (Uljens, 1989, pp. 30-33).

According to Uljens´ definition of primary and secondary phenomena, I think that when a researcher who applies phenomenography studies people´s conceptions of sloyd in general, sloyd represents a secondary phenomenon since it cannot be delimited in advance and since the students do not experience exactly the same phenomena. If, instead, you are interested in people´s conceptions of a certain tangible sloyd product that they all can see and experience, then you can say that the sloyd product is a primary phenomenon. In both cases the research is based on the second-order perspective; which means that you look at the phenomena through other people.

People´s conceptions of and different ways of looking at the world are not seen as something uniquely individual by the phenomenographers. Conceptions of the reality constitute instead a limited number of qualitatively different ways of how a phenomenon can be conceived. In phenomenography you are not interested in how or what a phenomenon is in reality or whether the conceptions that people have are true or false. You are instead interested in the meaning that people assign to the phenomenon in question and aim to describe their qualitatively different

conceptions of it. Uljens says that it is impossible to compare people´s conceptions of the world with the world itself, since the world is constituted of people´s conceptions of it. Finally he says that the concepts of the first-order and the second-order perspectives are two concepts by which you can distinguish two completely different research problems. The two problems can be related to one another by studying the same research area (Uljens, 1989, pp. 14-17). The first-order perspective concentrates on reality itself; in sloyd education this is presented by the research done by Lindfors and Malmberg, who have described sloyd holistically in terms of whole entities linked in hierarchies and according to what seems to be an integral part of a system and what seems to proceed in the system. Their research describes sloyd from the researcher´s perspective, not from other people´s perspective. The second-order perspective concentrates on human conceptions of reality. Research that emanates from this order describes phenomena in the world according to other people´s conceptions of the phenomena in question.

According to Marton (1981, p. 180), the aim of phenomenographic research is not to classify people or to compare groups. The aim is also not to explain, predict or make fair or unfair judgements of people. The aim of phenomenographic research is to find and systematize forms of thought in terms of which people interpret aspects of reality. The researcher´s task is to describe how a particular phenomenon is conceived by people. The main results of phenomenographic research is *the description categories of qualitatively different ways of conceiving the phenomenon in question* (Uljens, 1989, p. 34).

From the sloyd educational point of view, knowledge of qualitatively different ways of conceiving sloyd could be useful for developing sloyd in the comprehensive school, and to consolidate the discipline among other disciplines in the university. I see it as an advantage that sloyd education should use different research methods, and through them attain a versatile knowledge of the nature of sloyd.

3.2 How can sloyd education and phenomenography be combined?

As already mentioned above, there are ways of applying phenomenography in sloyd educational research. In a way, the structure of phenomenographic research resembles in many respects the current sloyd educational paradigm that builds on systems thinking and the use of soft systems methodology. They both see the phenomenon/object in a context and aim to describe it by using a system of elements that are in relation to one another. There are of course also many differences between phenomenography and soft systems methodology. The differences depend, for instance, on the perspective that the research takes as well as on the outcome of the research. Research in sloyd education has so far looked at sloyd from the first-order perspective. The researchers have concentrated on describing sloyd as a phenomenon by temporarily objectifying the research object. The results of the research have consisted of theories and models that describe sloyd and which later on can be tested in the real world. The outcome of research that has applied soft systems methodology can be presented in categories on several levels as verbal descriptions and models of complex systems whereas the outcome of phenomenographic research consist of description categories of qualitatively different ways of conceiving the phenomenon in question.

One may ask why sloyd education would need knowledge that derives from the second-order perspective. One answer could be that the perspective that it adopts gives us a chance to look at sloyd phenomena with the eyes of other people and learn how they conceive the activity. I got interested in phenomenography as a research method because it differs from most other methods by its way of looking at man in the world and because it uses many different kinds of data collecting such as interviews and drawings. When we learn more about how people conceive aspects of the world, we get valuable information that helps us to better understand and teach them. In sloyd, which broadly speaking deals with knowledge, skills and feelings, and where studying–learning occurs through the making of things, there are areas where sloyd education would benefit from the knowledge that could be derived by applying phenomenography as a research method. It would for example be interesting to learn more about students´ conceptions of learning in

sloyd, their conceptions of sloyd in a technological, an aesthetic, a social and an environmental context, and their conceptions of the importance of sloyd.

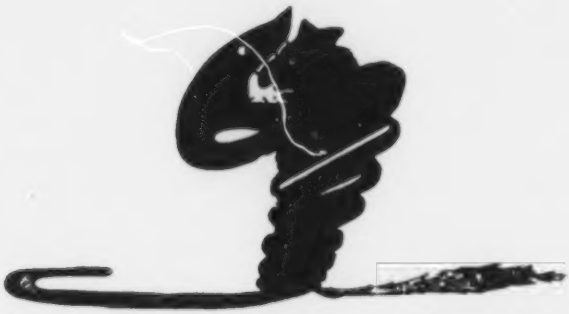
The second problem that I aim to discuss in this article consists of how one can study conceptions of a phenomenon that includes a process, a product which is made during the process, and learning that derives from the process and the product. Eklund-Myrskog (1996) has touched on this area in her doctor´s thesis, where among other things she describes learning outcomes of student nurses and car mechanic students. Both student groups study a subject that consists of theory and practice. The students first learn something in theory and then they apply their new knowledge in practice. The car mechanic students´ studying and learning is partly similar to studying and learning in sloyd. In both cases there is raw material of some kind that is worked up into a product, but there is also a major difference, a difference consisting in the educative perspective of sloyd. The goal of educative sloyd is not just learning something in theory and applying it in practice; it is not limited to producing a product. The goal of educative sloyd consists in the process that starts with a motive-result ideal and ends with the evaluation of the finished product. The students in sloyd are not only taught how to make things, a lot of emphasis is put on the educative perspective that sloyd provides, for example to rely on oneself, to learn how to learn, to become creative, to have aesthetic experiences, to develop all sides of one´s personality, and to conceive the holistic aspect of sloyd in an environment.

Much of the phenomenographic research on learning (Heilä-Ylikallio, 1994, Eklund-Myrskog, 1996) can be of help when the method is applied in sloyd education. One must, however, bear in mind the uniqueness of learning in sloyd that derives from using one´s knowledge, skills, and personality for making tangible products from raw material. The sloyd process, how you work and solve problems, is just as important as the finished sloyd product.

4 Children´s drawings as research material

The present chapter deals with the use of drawings as research material. First some theories on children´s development in drawing is presented. These theories can be regarded as a basis for how children´s drawings can be analyzed. Futher on in this chapter a couple of studies are presented where children´s drawings have been used as research material. My aim in presenting these studies is to show how drawings have been used in pedagogical research and to show how drawings can help the researcher find out conceptions of certain phenomena that would be difficult to grasp in another way. The presented studies also show that when drawings have been used as research material they have often been completed with other kinds of data as well, such as data from interviews, written comments and questionnaires.

Before I begin the presentation of different theories about children´s drawings, I would however like to quote what Antoine de Saint-Exupéry in *The Little Prince* (1974) had to say about children´s drawings and grown-ups´ response to them. The extract shows how children have an ability to see "beyond" the drawing by using their imagination, something that many grown-ups seem to lack, according to Saint-Exupéry´s story.



"Once when I was six years old I saw a magnificent picture in a book, called 'True Stories from Nature', about the primeval forest. It was a picture of a boa constrictor in the act of swallowing an animal. Here is a copy of the drawing.

In the book it said: 'Boa constrictors swallow their prey whole, without chewing it. After that they are not able to move, and they sleep through the six months that they need for digestion.'

I pondered deeply, then, over the adventures of the jungle. And after some work with a coloured pencil I succeeded in making my first drawing. My Drawing Number One. It looked like this

I showed my masterpiece to the grown-ups, and asked them whether the drawing frightened them.

But they answered: 'Frighten? Why should any one be frightened by a hat?'

My drawing was not a picture of a hat. It was a picture of a boa constrictor digesting an elephant. But since the grown-ups were not able to understand it, I made another drawing: I drew the inside of the boa constrictor, so that the grown-ups could see it clearly. They always need to have things explained. My Drawing Number Two looked like this:

The grown-ups´ response, this time, was to advise me to lay aside my drawings of boa constrictors, whether from the inside or the outside, and devote myself instead to geography, history, arithmetic and grammar. That is why, at the age of six, I gave up what might have been a magnificent career as a painter. I had been disheartened by the failure of my Drawing Number One and my Drawing Number Two. Grown-ups never understand anything by themselves, and it is tiresome for children to be always and forever explaining things to them."
(Saint-Exupéry, 1974, pp. 7-8)

In order not to behave as the grown-ups did in *The Little Prince*, but to better understand children´s drawings, I have acquainted myself with children´s drawing development and found that there are several different opinions about children´s development in drawing and about what it really is that children draw – do children draw what they see, feel or know?

4.1 Theories on children´s development in drawing

Many of the theories about children´s drawing present the development in different stages or phases that the child goes through at certain ages. According to Victor Lowenfeldt the evolutionary developmentary process in drawing includes the following stages: *the scribbling stage*, approximately age 2-4; *the preschematic stage*, approximately 4-7; *the schematic stage*, approximately 7-9; *the dawning realism*, approximately 9-11; *the pseudo-naturalistic stage*, approximately 11-

13 and *adolescent art*, approximately 13-17. This theory of stages gives answers to *what* children´s drawing development looks like at certain ages. (Löfstedt, 1985, 9-16; Jansson Wennergren, 1988, pp. 2-12)

According to Ulla Löfstedt (1985) there are at least five different theories about children´s development in drawing. Four of them have been presented by Elisabeth Clarke whereas the fifth theory is Löfstedt´s own contribution. What Löfstedt has wanted to find out, and what is presented below, is *why* children´s drawing development proceeds the way it does.

The first theory on children´s development in drawing has been introduced by Herbert Read, who was committed to the Freudian theory of subconcious conceptualization. The theory is called *the personality theory* and it says that children draw what they feel. The theory sees children´s drawings as reflections of their own personality. Drawing is a spontaneous and partly unconscious process. According to Read children are unharmed by influences from the external world when creating. Their drawings are spontaneous but, as time goes by, children experience the necessity of coping with the external world and they start to imitate a naturalistic mode of representation. Futhermore Read claims that in drawing the child wants to escape from reality and create something personal. According to the personality theory unconcious thoughts and feelings can through drawing be expressed and integrated in the personality. (Löfstedt, 1985, pp. 19-20; Jansson Wennergren, 1988, pp. 18-21))

The second theory is the *repetition theory*. Its main supporter is Rhoda Kellogg who has analyzed thousands of children´s drawings from all over the world and who has written a well known book about the subject, *Analyzing Children´s Art* (1969). According to this theory children repeat in their drawing all the signs that earlier generations have developed and that exist as an unconsious inheritance in them. Kellogg has found similarities in children´s drawings from different parts of the world and similarities with the ancient cave drawings in the Mediterranian countries. Children´s drawings have a natural aesthetic touch and they are in no way dependent on what reality looks like or what the child knows about reality. Kellogg says that all children have a

basic aesthetic ability, a feeling for rhythm and balance that steers their drawing. The repetition theory emanates from Jung. (Löfstedt, 1985, pp. 21-22)

The third theory on children´s development in drawing is the *cognitive development theory*. It is based on Piaget´s theory of cognitive development and is supported by Victor Lowenfeldt. According to this theory children draw what they know, the drawing reflects their cognitive development. Therefore children can only draw what they know, what they have conciously comprehended and they cannot draw something that they do not have a clear understanding of. This theory gives an answer to why many children draw a car seen from the side with four wheels even though they actually only can see two wheels. The child knows that a car has four wheels and that this is an essential fact about it. The child has not yet learnt how to draw a three-dimensional object on a two-dimensional surface. Children´s drawings are an expression of the knowledge that they have about the environment and reality. (Löfstedt, 1985, pp. 23-28; Jansson Wennergren, 1988, pp. 2-12)

The fourth theory on children´s development in drawing is the *perceptual development theory*. According to this theory children draw what they see and the drawings reflect how children conceive the visual world around them. This theory is closely connected to the Gestalt interpretation of perceptual development. One of the supporters of this theory on children´s development in drawing is Rudolf Arnheim, who has written *Art and Visual Perception* and *Visual Thinking*, and who has said that the eye and the hand are the father and the mother of artistic activity. Arnheim shares Lowenfeldt´s ideas that the development of the ability to draw takes place in certain phases and according to certain rules, but his explanations are different. Arnheim bases his theory on the principle of simplicity and the law of differentiation. The principle of simplicity means that the development goes from the general to the more specific. The law of differentiation on the other hand means that an object, for example a circle, can in the beginning represent almost anything, any object, but when the child learns to draw other objects like triangles and squares, the circle begins to stand for round objects such as the head, the sun or the palm of a hand. Furthermore Arnheim claims that children´s drawings do not

imitate reality. He says that children draw what they see but that they see more than they draw. What they draw is dependent on the nature of the drawing and what their expectations of the drawing itself are. Arnheim also says that x-ray drawings, drawings where the inside and the outside are seen simultaneously, are a way for children to place their drawing on the two-dimensional surface of the paper. The relation between depth and surface is not yet differentiated. A drawing that depicts a person standing in a square can according to this theory mean that the person is standing inside a house with walls, floor and ceiling. (Löfstedt, 1985, pp. 29-35; Jansson Wennergren, 1988, pp. 12-18)

The fifth and last of Löfstedt´s theories on children´s development in drawing is the *cultural theory*. According to this theory children draw what they see in other´s drawings, it is a reflection of cultural drawing. Löfstedt bases her presentation of the theory on June King Mc Fee, who stresses the importance of observation. *What* we observe in our environment are things that we have learnt to observe through social interaction and through the culture we live in. *How* we understand our environment depends on our cognitive style, our way of dealing with information. This cognitive style is also dependent on our culture and society. Children´s drawings are a result of a cultural and social process and the ability to draw develops through social interaction. The cultural theory is based on Gombrich´s theory of the development of art and on a theoretical school that stresses the importance of teaching/learning for development. Mc Fee claims that one of the reasons why people cannot draw is that they have not learnt to see, observe, in the right way for drawing. We have been taught that even though objects are seen at a distance and they look smaller, or that they seem to have different forms according to the light, they are in fact still constant and have the same shape and color. Because of this we do not observe or notice that objects actually look different seen from different angles or in different lights. Most people grow up not drawing well because they have not learnt to look at objects "in the right way" in order to draw them. The lack of tuition leads both children and adults to rely on stylized pictorial forms. One of the most important influences on children´s development in drawing according to this theory, is drawings made by other people and other children. Children copy other children´s drawing because they are often easily available and because they are at the same developmental

stage. When children are not satisfied with their drawings they turn to the drawings of other children, adults or media for help. The picture of the small house with two windows and a door is drawn by children regardless of whether they live in a block of flats or in a house, and it is probably a picture heritage from generation to generation. The young child learns to form signs with drawing tools on a piece of paper by observing others. Without the help of models there would be little or no drawing behaviour among children. (Löfstedt, 1985, pp. 36-43; Cox, 1989, pp. 43-58)

Drawing as an activity always contains problem-solving. Generally we want to depict something three-dimensional on a two-dimensional surface, for example on a piece of paper. Even this causes problems that must be solved. One must decide which parts one wants to draw and what kinds of marks best represent each feature, how they should be related to each other and so on. The activity of drawing is therefore a problem-solving activity, as intellectually demanding as any other. (Cox, 1989, p. 44)

4.2 A couple of studies where children´s drawings have been used as research material

The American psychologist Jose Barchilon (1964) studied the artistic development of a young girl for two years. He analyzed her drawings and interpreted them as her way of dealing with feelings such as fear and sorrow. He also compared the girl´s artistic development with works of established artists such as Manet and Picasso. Barchilon found similarities in Picasso´s works and the girl´s artistic development.

Jacqueline J. Goodnow (1978) of Australia has studied how children depict movement in drawing and how they technically solve problems that arise in the drawing. Goodnow has made several studies in which she has asked children of different ages to draw persons in action. She has analyzed the drawings with reference to time intervals, age and gender. One result of her study is that some development concerning how a child draws a person is foreseeable. Another result is that children

often use the same basic form for whatever they want to draw. By changing some details such as the shape and size of the ears they can draw for example either a cat, a dog or a rabbit. The researcher found, however, that the children lacked technical knowledge of how to depict certain things in the drawing as well as which movements in the human body are possible.

Margaret S. Steward, Taeko Furuya, David S. Steward and Atsuko Ikeda (1982) have studied American and Japanese children´s conceptions of and ways of drawing the inside and the outside of the human body. The drawings were compared in order to find similarities and differences depending on culture, age, gender and health. Data was gathered with the help of an inside-outside drawing that the children were asked to complete. The children´s comments were also recorded and a questionnaire was sent to the mothers in order to get information about the children´s health. The researchers paid a lot of attention to the sociocultural aspects of the children´s qualitatively different conceptions of the human body.

Claes-Göran Wenestam och Hannelore Wass (1987) studied Swedish and American children´s conceptions of death. The children were asked to draw a picture that depicted what they came to think about when they heard the word "dead". The drawings were completed with a short comment on the back. The aim of the study was to find out if there were any qualitative differences in the conception of death between Swedish and American children. One of the most important results of the study was the qualitative differences that were found. The results also showed that the major differences in the childern´s conceptions of death were to be found between the nationalities and were therefore cultural.

Ria Heilä-Ylikallio (1994) has studied pre-school children´s conceptions of reading and how they deal with written texts in their environment. The study can be seen as culture-oriented as it deals only with Swedish-speaking children in Finland. Heilä-Ylikallio asked 44 pre-school children to draw a picture of what one does when one is reading. She also asked the children to tell her what they thought that reading is. The results were analyzed according to the children´s conceptions of reading and to their way of using written language. Heilä-Ylikallio found four

superordinate categories of pre-school children´s conceptions of literacy. The children conceived literacy (1) as connected with thinking, (2) as an activity, (3) as connected with school and learning, and (4) as something unclear that the child was not able to define. Sixty-one per cent of the children could also be classified as readers even though they tended to underestimate their own reading ability.

The studies presented above have inspired me in my research and helped me in planning and conducting the empirical study. One conclusion that can be drawn from these studies is that drawings can successfully be used as research material when one is interested in children´s conceptions of different phenomena. Drawing is a natural way for children to express themselves and the drawings often include a lot of information which the researcher, who is often an adult, has to elicit by being open-minded regarding the children´s way of thinking. One can, however, never be absolutely certain that one has interpreted the drawing in the way that the child meant it to be interpreted. The only thing the researcher can do is collect as much information as possible from the child who has drawn the picture, and to have an open mind and refrain from letting personal values and conceptions influence the interpretation.

5 The empirical study

5.1 Grounds for using drawings as research material

The empirical study was done for two reasons. Firstly it was done in order to learn how phenomenography could be used in sloyd educational research, and secondly it was done in order to find out students' conceptions of sloyd. The empirical study was carried out using drawings which also constitute rare research material. I decided to use drawings as research material because it was a new and interesting method that I wanted to try out. I was very well aware of the problems that this would cause, but with the use of drawings I thought that I could find out conceptions of sloyd that would maybe be difficult, or take a lot of time, to find out using for example interviews.

The use of drawings as research material has of course its problems. One of them is that many think that they cannot draw and that prevents them from expressing what they really think. There is also the problem of interpreting what someone else has drawn, but when you analyze drawings in phenomenography you focus on the content of the drawing and do not pay attention to how well the drawing is made (Wenestam, 1988, p. 3). In order to be able to analyze the drawings it is very helpful if the drawings are completed with a short description of the motif on the back of the drawing. The previously presented studies where drawings had been used as research material helped me a lot in planning the empirical study and in conducting it.

5.2 Preparations for the empirical research

Sloyd is a subject in the comprehensive school that is taught equally to both boys and girls. Sloyd can be divided into two different branches, textiles and technical sloyd. Because of this differentiation, students do not in reality choose equally much teaching in each sloyd area. Students most often choose either one of the sloyd areas and have only short periods of time of the other type of sloyd. However, in the first and second grade in the comprehensive school sloyd is a subject that is taught to all students. In the third grade students usually have half a term of each sloyd type, textiles and technical sloyd. After this period students can choose which sloyd area they would prefer. The choice is often markedly gender-linked, girls choosing textiles and boys choosing technical sloyd.

One of the problems that I faced when I wanted to find out students´ conceptions of sloyd was how to ask them about it and what instructions I should give them for the drawing task. Since I wanted the students to think about the sloyd process, I decided that the best solution would be for them to draw a picture of someone working on a sloyd product. I got this idea from Ria Heilä-Ylikallio´s study where she had asked pre-school children to draw pictures that showed what one does when one is reading. Other possibilities would have been to ask them to draw a picture that depicted the first thing that came into their minds when they heard the word "sloyd", in the same way as Wenestam and Wass had done in their death-study, or to ask them to draw a picture that depicted what went on during a sloyd lesson. The first alternative, to draw "sloyd", was however rejected since I thought that it was too wide and abstract, whereas the second alternative, drawing what went on during a sloyd lesson, restricted the task to sloyd in school.

5.3 Data collection

Because students in the third grade have recent experince of both sloyd areas, I chose to limit the empirical study to finding out conceptions of sloyd among these students. Third-graders are about nine years old and

can according to research in development in drawing be assumed to be of an age when they are not afraid of drawing. The older the children get, the more they think that they cannot draw and feel inhibited about drawing.

Since the empirical study was intended to be a pilot study, I decided not to gather too many drawings or to make a great fuss of the data collecting process. I got in touch with an old friend who works as a teacher in a comprehensive school in Ostrobothnia in Finland and asked if her students could draw pictures for me. The teacher welcomed me and promised to check with the headmaster of the school if it would be all right. The headmaster also received me kindly and a date was set for my visit to the school. Practical reasons influenced the time for the empirical study and it took place on a Wednesday morning in April when the children would otherwise have had physical education.

The class consisted of twenty third-graders, eleven boys and nine girls; one boy was absent because he was ill. The empirical study took place in a classroom where the students usually had textile work. The classroom was also used for other subjects and very few objects that clearly pointed to textile work were visible. The teacher had during the previous week prepared the children for the task by telling them that I would come and that I would need their help for something. The teacher had not mentioned the subject nor that the students would be asked to draw. I was introduced to the students as an old friend of the teacher's and as a teacher in textile work who now did research in sloyd. I explained to the students in more detail what I wanted them to do. First I asked them to think about sloyd and then to draw a picture of *someone who is working on a sloyd product* (in Swedish "Rita en bild som visar när någon slöjdar"). The teacher and I handed out size A4 drawing paper and colour crayons. Some students immidiately began drawing while others just sat looking at the piece of paper in front of them. I walked around in the classroom and talked to the students. One student who had problems getting started said that she could not draw a chair and that this was the reason why she had not begun drawing. After a short discussion of how she could solve the problem of the chair, the student began to draw and I moved on. When the drawings were finished I asked the students to write their first name on the back of the drawing as

well as a short comment on what they had drawn. I thanked them for their participation and then they were allowed to go and change clothes for their physical education. All students had finished their drawings in about 30 minutes.

A quick glance at the drawings showed twenty colourful and informative drawings that depicted raw materials, tools, and sloyd products. Some of the drawings were more detailed than others and I could even then discern different conceptions of sloyd in them.

5.4 A few comments concerning the validity of the data collection

As already mentioned there were several aspects that influenced my collecting of the research data. The fact that I was a stranger to the students who suddenly wanted them to draw pictures of sloyd can have caused some of them not to take the task very seriously. Although I think that the teacher, who was an old friend of mine, helped the situation by being favourable to my research and in advance telling the students about my visit. Even though I was a stranger to the students they knew that I was a good friend of their teacher´s whom they clearly seemed to get along with well. The students had, as far as I could judge, a positive attitude towards me.

The fact that the students would have had physical education can also have influenced their willingness to make a special effort to produce a drawing connected with a completely different subject. As the teacher had prepared the students for my visit, she had said that the task would not take more than 30-40 minutes and that they would play ball for the whole remaining time of the physical education lesson. I also stressed this and agreed with the teacher that the students would be allowed to go and change clothes as soon as they were ready with the drawing task. However, one cannnot exclude the possibility that the students might have thought about sloyd in a different way if they had been asked to draw pictures of sloyd during a sloyd lesson.

It was also challenging to get the students to think about sloyd without telling them too much about it or without influencing them in any way. I

asked them to draw a picture of someone who is working on a sloyd product in order to make them think about the sloyd process and not only about tools and raw materials or finished sloyd products. I also wanted them to feel free about drawing any person they chose. Maybe they would think about their grandmother knitting in a rocking chair or maybe they would think about their own experiences of sloyd. When I asked the students to draw a picture of *someone* who is working on a sloyd product, I did not clearly enough stress the fact that they themselves should decide who this *someone* would be. In most drawings the students have not mentioned who it was that they thought about when they were drawing.

While the students were drawing their pictures, they were allowed to talk to each other. At that moment I realized what an enormous amount of interesting data I could have gathered if only I had brought along a tape recorder or a video camera. The students talked about what they would draw, how they would draw it, who they were drawing, what the situation in the picture depicted and how they in general felt about the given task and what they thought about sloyd. When I asked the students to write a short comment on the back of the drawing, I realized that they would only write a few words and that the actual conceptions of sloyd should have been recorded on tape during the drawing process. On the other hand this might have prevented them from focusing on the drawings which constituted the main research data for this study.

Even though there were aspects that might have influenced the students when they were completing their drawing task, I do not think that any of the aspects were so decisive that they would have undermined the validity of the research material or the reliability of the empirical research.

6 Results

6.1 Categorization of the drawings

For the categorization of the drawings I once again could rely on Heilä-Ylikallio´s study and her way of doing the categorization as well as on the study made by Wenestam and Wass. All the different theories on children´s development in drawing reminded me of the multiple ways that drawings could be interpreted; however, I decided to focus on the drawing as a whole and not pay attention to how well the drawings were made or what they revealed about the children´s cognitive development.

I began to categorize the drawings by putting them on a notice board and looking at them for some time. First I could not see any similarities or clear categories, the drawings all seemed unique and very different. But after a while I could distinguish categories of drawings that with regard to their content somehow resembled each other. There were drawings where tools and raw materials were depicted as well as drawings that clearly showed someone working with a sloyd product and drawings that concentrated on the finished product. I roughly categorised the drawings and noticed how they began to resemble the worlds in Lindfors´ systems model of sloyd or craft activity.

I found four qualitatively different categories that concentrated on the students´ conceptions of the interaction between the student, the sloyd process including the sloyd product and tools as well as the environment. I decided to compare my categories with Lindfors´ worlds in the

systems model. Below, each category is presented, accompanied with one or two drawings. The comments below the drawings are the students´ own comments that were written on the backs of their drawings.

6.1.1 Category A

The drawings in category A show that students conceive sloyd as an activity that takes place in an environment consisting of other tools and materials than those in use at the moment as well as of other persons working in the same room. The drawings also show that the depiction of the sloyd area is gender-linked even though students in the third grade in the comprehensive school have had equally much teaching in both sloyd areas, textiles and technical sloyd. In accordance with Lindfors´ model I have interpreted the drawings as showing that the students in this category conceive of sloyd as an interaction between the world of the student and the world of technological-aesthetic aspects through the working process, an interaction with the world of social aspects through the presence of other persons and taking others into consideration, as well as indirectly of the world of culture and nature through the cultural heritage that sloyd presents and the use of raw materials from nature for the making of the sloyd products.

There are six drawings in this category, four of them by girls and two by boys. In five of the six drawings in this category, the students have drawn clear expressions on the faces of the persons. Three drawings show a smiling person while two students have drawn grave expressions on the persons´ faces, which can be interpreted as signs of concentration, frustration or unhappiness. These facial expressions can be seen as signs of the students´ personal experiences and conceptions of sloyd activities. There is especially one drawing that shows what an aesthetic experience sloyd can be (Figure 2). The drawing shows a boy who is working in a well-equipped room where each tool and material has its place. You can see his half-finished sloyd product on the planing bench. The sun is shining through an open window on the wall, and the boy is smiling and singing while he is doing his work. I think that this drawing clearly shows that the student conceives sloyd with all his senses as an aesthetic experience.

Figure 2.
Example of a drawing in category A. "I am working on my sloyd product." (In Swedish: "Det är jag som snickrar")

In another drawing a student has drawn two persons who are working (Figure 3). One of them is sitting on a chair knitting. You can see that he has proceeded in his work but that he also feels frustration. His hair stands on end and his expression is concentrated. The other person in the drawing stands behind the chair and is sawing off one of the legs of the chair. This can be interpreted as an attempt by the student to show how one can be disturbed in class during one´s work by other students who concentrate on disturbing instead of working on their own sloyd product.

Figure 3.
Example of a drawing in category A. "Someone is knitting a muffler, the little one is a troublemaker." (In Swedish: "Någon stickar en halsduk, den lille vill bråka.")

The drawings in category A thus show other tools and materials in the environment than only those in use. I could distinguish several subcategories according to sloyd area, textiles or technical sloyd. I could further distinguish subcategories seizing on what technique was depicted (Figure 4). The categories are, *A.1 Textile materials,* two girls; *A.1.1 Embroidery; A.1.2 Knitting; A.2 Wood and metal materials,* three boys; *A.2.1 Woodwork; A.2.1.1 Hammering; A.2.1.2 Planing; A.3 Both textile, wood and metal materials,* one boy; *A.3.1 Knitting; A.3.2 Sawing.*

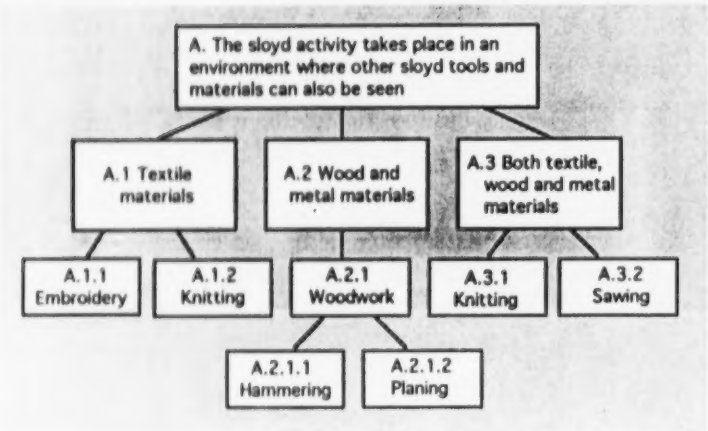

A. The sloyd activity takes place in an environment where other sloyd tools and materials can also be seen
A.1 Textile materials
A.2 Wood and metal materials
A.3 Both textile, wood and metal materials
A.1.1 Embroidery
A.1.2 Knitting
A.2.1 Woodwork
A.3.1 Knitting
A.3.2 Sawing
A.2.1.1 Hammering
A.2.1.2 Planing

Figure 4.
Category A with subcategories.

6.1.2 Catgory B

The drawings in category B show a person who is working on a sloyd product in an environment that does not show clear signs of other sloyd-related materials. There are eight drawings in this category, five of them made by girls and three of them made by boys. In four of the five drawings that show the face of the person working with a sloyd product, the person smiles. Even though the students have concentrated on drawing only the person working with a product, their drawings are full of details and one can easily discern what aspects have been in focus in the teaching. For example in the drawings that show a person sewing on a sewing machine, the students have drawn the balance wheel, thread reel and pedal, even the make of the machine can be seen in some drawings (Figure 5).

Figure 5.
Example of a drawing in category B. "He is sewing on a machine." (In Swedish: "Han syr på en symaskin.")

The students have also drawn the right posture when sewing on a machine. It is interesting to notice how the students have technically dealt with drawing someone sitting at a sewing machine. Two students have solved the problem by drawing the persons from behind. This is how one often sees students when they are working in rows at school. One student has drawn a sewing machine and two big hands – this is what you can see when you yourself are sewing. The fourth student has drawn the person from the front but turned the sewing machine the wrong way (Figure 5). In reality sewing would not succeed in this way since the person is actually sitting behind the sewing machine. In all the other drawings the students have drawn the persons standing, independently of which sloyd area the drawings represent.

A common feature of all the drawings in category B is that they do not depict a total environment for the activity or that the students have drawn some kind of frame around the person working on a sloyd product. Only the necessary tools and materials for the sloyd activity at

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hand are drawn. The lack of relevant surroundings for the sloyd activity can be interpreted as indicating that the students conceive sloyd as an interaction only between the student and the material that she is working on. According to the worlds in Lindfors' model this could mean that the activity is an interaction between the world of the student and the world of technological-aesthetic aspects.

I could distinguish two subcategories depending on which sloyd area the drawings showed. Furthermore I could distinguish the technique within the sloyd area (Figure 6). The following subcategories were found: *B.1 Textile materials*, five girls and two boys; *B.1.1 Sewing on a machine; B.1.2 Knitting; B.2 Wood and metal materials*, one boy; *B.2.1 Woodwork; B.2.1.1 Sawing*.

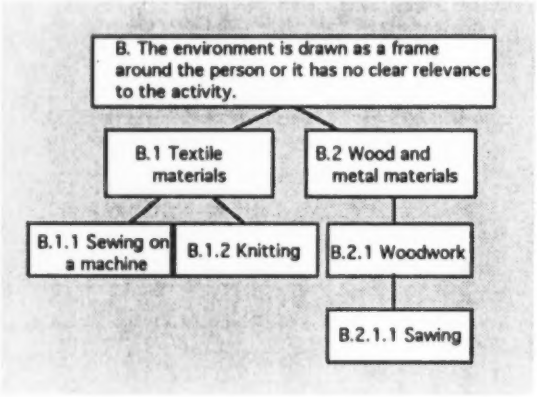
B. The environment is drawn as a frame around the person or it has no clear relevance to the activity.
B.1 Textile materials
B.2 Wood and metal materials
B.1.1 Sewing on a machine
B.1.2 Knitting
B.2.1 Woodwork
B.2.1.1 Sawing

Figure 6.
Category B with subcategories.

6.1.3 Category C

The third category, category C, includes three drawings, two made by girls and one made by a boy. Common to these three drawings is that they all show the finished sloyd product. The main category is therefore

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C. The finished product. Two of the drawings are very similar both with respect to their content and to the way in which they are drawn. They are drawn by girls who sat next to each other and who are probably best friends. They have drawn a smiling person standing next to a picture on a wall (Figure 7). The motifs of the pictures on the wall are different as well as the colours in the drawings.

Figure 7.
Example of a drawing in category C. "I have sewn a wall decoration." (In Swedish: "Jag har sytt en tavla.")

The third drawing, which is made by a boy, shows a tractor on a planing bench. The boy has used only two colours in his drawing, yellow and black, and used only the bottom part of the paper. The lonely tractor on the planing bench can be seen as a proud exhibition of the finished product or as the result of many difficult hours and a feeling of loneliness.

One of the interesting things about the drawings in category C is that the students have concentrated on the finished sloyd product and that they see it as something outside themselves. In both drawings that show

a person there is no contact between the person and the product. Only the students' explanations on the back of the drawing indicate that they have made a picture of some sort in sloyd. Even though there is no contact between the person and the product, my interpretation is that the students are satisfied with their product since the persons in the pictures have a calm and relaxed posture and they are smiling (Figure 7). The drawings in category C can thus be seen as belonging to the world of the student and the world of technologial-aesthetic aspects in Lindfors' model. The drawings show the student as a person who is willing to exhibit the result of his work and who shows pride in it.

The categorization of the drawings is as follows (Figure 8): *C. The finished sloyd product; C.1 Person and product,* two girls; *C.2 Product and work bench,* one boy.

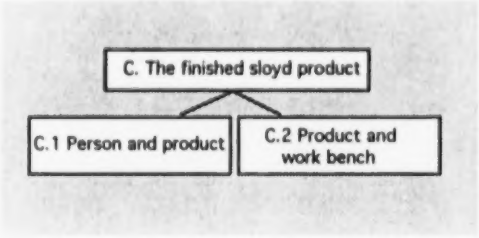

Figure 8.
Category C with subcategories.

6.1.4 Category D

The fourth main category, category D, consists of only three drawings, which show tools and materials. All drawings are by boys and they have all drawn tools and materials connected with technical work. All of them have also chosen to draw sawing.

A common feature of the drawings in this category is that they all depict working on raw material, and even though the students have not drawn

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many different objects, the drawings are quite detailed. Although the students have not drawn a person or an environment for the activity, they have carefully drawn the sawteeth and the surface of the plank. By means of short strokes the students have also illustrated how the chips fill the air when you are sawing and the speed and strength that are necessary for the activity. One of the students has clarified his drawing with an arrow and a comment on the front of the drawing (Figure 9).

Figure 9.
Example of a drawing in category D. "A saw is sawing off a piece of wood, the axe and the knife are also there." (In Swedish: "En såg sågar av träklabben, yxan med, kniven med.")

This category of drawings is also interesting considering the task that the students were given: to draw a person that is working on a sloyd product. In the instructions it was clearly said that they would draw a person, but these students have chosen to draw only the tools and the raw material. One can ask if they conceive sloyd to be an activity that does not have anything to do with them. One of the students has written on the back of the drawing that the saw is sawing (Figure 9). According to him it is the tool that acts, not the person. According to Lindfors' model I have interpreted these drawings as illustrating solely the world of technological-aesthetic aspects.

The drawings in this category were categorized as follows (Figure 10): *D. Sloyd materials and tools; D.1 Technical sloyd; D.1.1. Wood work ; D.1.1.1 Sawing.*

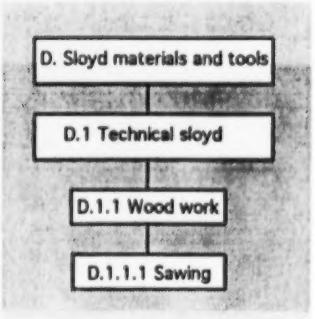

Figure 10.
Category D with subcategories.

6.2 Students´ qualitatively different conceptions of sloyd presented in terms of the worlds in Lindfors´ systems model

Even though one should not grade qualitatively different conceptions of a phenomena in phenomenographic research, I cannot refrain from presenting the results of the empirical study without discussing the students´ different conceptions of sloyd in order of precedence. In the same way as the categories are designated from A, B, C, D, I can also say that the students´ conceptions of sloyd can be put in order of precedence beginning with the students in category A, who had the most expanded and versatile conception of sloyd, to the students in category D, who saw sloyd as merely consisting of tools and raw material.

In order to clearly show how the students´ qualitatively different conceptions of sloyd that were presented above are related to each other and to the worlds in Lindfors´ model I have chosen to present the results in the following figure (Figure 11).

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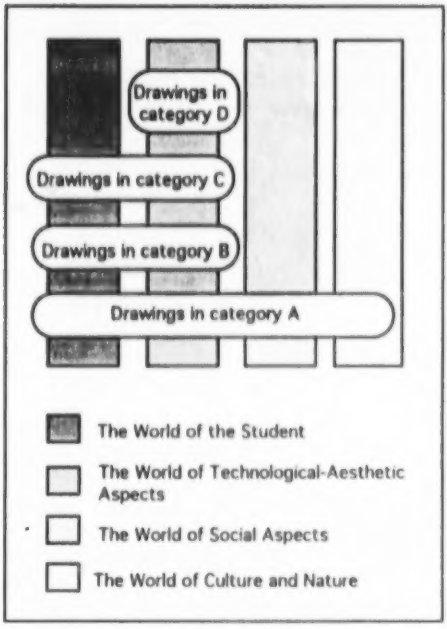
Drawings in category D
Drawings in category C
Drawings in category B
Drawings in category A
The World of the Student
The World of Technological-Aesthetic Aspects
The World of Social Aspects
The World of Culture and Nature

Figure 11.
The four main categories described in terms of Lindfors´ systems model of sloyd or craft activity.

The drawings in category A clearly show that the students conceive sloyd as an activity that spans over several areas and that the activity is influenced by factors outside the agent and the raw materials he/she uses. This conception includes taking other people and natural resources into consideration. This is the conception of sloyd that I feel most sloyd teachers would wish their students to arrive at.

The drawings in categories B and C show that the students conceive sloyd as an activity that takes place only between the raw materials and tools and the person using them. The students that drew pictures according to these two categories do not conceive sloyd as an activity that takes place in a versatile environment, nor do they understand that

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sloyd is not only limited to the process between a person and some material.

The fourth category, category D, consisted of drawings that showed a very narrow conception of sloyd. The students who drew these pictures conceived sloyd as an activity that took place without a person or a motive-result ideal, but only involved the tools that worked on the raw material.

6.3 Reliability of the categorization of the drawings

The reliability of the categorization of the drawings is usually done by using another person as a co-judge. The co-judge´s task is to categorize the drawings according to the researcher´s descriptions of them. The number of drawings that both the researcher and the co-judge place in the same categories indicates the reliability of the categorization. The researcher and the co-judge can, after the co-judge has presented her categorization, discuss the possible differences that they had regarding the categories and in that way reach a higher degree of reliability for the research. One must however point out that the categorization that the researcher has done is only one way of looking at the research material and that there are also other ways of interpreting the material. What is important is, however, that the researcher´s categorization is relevant to the research task. It is to be recommended that several co-judges are used. (Wenestam, 1988)

I had two different co-judges to categorize the drawings according to my descriptions of the categories. The first co-judge was a textile teacher and had therefore a previous knowledge and understanding of sloyd. She categorized the drawings into the four categories, but named them differently. According to her, the first category consisted of drawings that depicted "me working with tools on a product in a room filled with things", the second category consisted of drawings that depicted "me working with tools on a product", the third category consisted of drawings that depicted "me and my finished product", and the fourth category consisted of drawings that depicted "materials and

tools". The first co-judge had categorized seventeen of the twenty drawings in the same way as I had (Appendix 1), the reliability per centage therefore being 85.

The second co-judge was a man without any vocational background or teaching experience of sloyd. It was interesting to see how the co-judge without any connection with the research field would categorize the drawings and whether he could see the differences and similarities in the drawings. Having categorized the drawings, the second co-judge's categorization differed from mine in five cases, the reliability per centage being 75. After a discussion of the categorization he changed his mind in four of the five cases. He had first placed those four drawings in the first category but changed his mind and placed them in the second category after our discussion of the concept of "environment". Finally nineteen of the twenty drawings matched (Appendix 1) and the reliability per centage was 95.

The two co-judges never met and therefore had no chance of discussing their categorization with anybody but me.

7 Concluding discussion

To begin with I would like to say what an interesting learning experience it has been producing this minor subject dissertation. The attempt to use the phenomenographic method in sloyd educational research has given me a new insight into the world of research and I have found that it can be most interesting, surprising and most of all fun.

7.1 Conclusions and reflections on the results of the empirical study

The use of drawings as research material convinced me that doing research is actually an artistic process where the researcher needs to be open to other people´s reactions or comments, and sensitive enough to find the actual meaning behind the collected research material. Theories about children´s development in drawing can be of use when analyzing the drawings, but one must nevertheless keep in mind that drawings can be analyzed in many ways and that the researcher should focus on analyzing the drawings in a way that fits in with the research task. Drawings as research material can by some people be regarded as difficult to interpret and not equally convincing in research as for example interviews. I found it quite easy to analyze the drawings and found many things in them that might have been difficult to discover by relying for example on interviews. When you ask someone to draw something, and only give them the subject, they are actually solving an open-ended problem and can choose for themselves what they want to include in or exclude from the drawing. The fact that many are afraid of drawing and feel that they cannot draw is something the resercher must

be aware of but that can be compared to the fact that many have problems expressing themselves in writing or in speech. Someone has said that a picture tells more than a thousand words. After this experience I have to agree with that statement.

The empirical study should be seen as a pilot study concerned with applying phenomenography to sloyd education and using drawings as research material. The results of the study showed how much interesting information drawings could provide about students´ conceptions of sloyd. However, in order to say something more general about students´ conceptions of sloyd, one ought to have a more extensive and versatile research sample. This study gave only some conceptions of sloyd of a few nine-year-old students living in the same geographical area and social environment.

One conclusion that can be drawn from the study is that students focus on several different things when they are asked to think about sloyd. Some of them think of sloyd as an activity that takes place in a many-faceted environment like a classroom, while others think about raw materials and tools. If students have such different conceptions of sloyd activity, this is a good reason for asking if it also affects their learning in sloyd and their conceptions of sloyd even after they have finished school. Considering the fact that many of the drawings were gender-linked might also have to do with the fact that the cultural heritage affects the students to a larger extent than teaching in school can do. These are aspects that would need further research in order to be adequately dealt with.

7.2 Conclusions concerning the application of phenomenography in sloyd educational research

This first contact with phenomenography in sloyd educational research has convinced me that the method can be successfully used to find out people´s qualitatively different conceptions of phenomena connected with sloyd. From my personal experience I would say that when one wants to find out conceptions concerning any area or phenomena, it does not matter if the area is actually very versatile, what matters is

what aspects within that range or area the researcher wants to find conceptions of, and how the questions are asked that focus on that specific area.

A colleague of mine asked whether phenomenography somehow could be used in actual sloyd teaching in the comprehensive school. This is a question that requires more knowledge of the method, but as I see it at this point, I think that it would be fruitful for the teacher to know more about students´ conceptions of the subject or phenomena regarding the subject that they teach. For example, when students from several different schools reach the seventh grade, it could be interesting for the sloyd teacher to learn about the students´ conceptions of sloyd. The knowledge that the teacher would gain could be of use when planning the teaching and learning to know the students.

The pilot study which I have made applying phenomenography and using drawings as research material has convinced me of the applicability of the method in sloyd education. In order to use the method more fruitfully, it is however necessary to learn more about it and to carefully consider what kind of research in sloyd education it can be applied to. Further research where phenomenography is used in sloyd education could for example focus on conceptions of sloyd among a larger number of students. It would also be interesting to find out teachers´ and parents´ conceptions of sloyd in order to learn more about sloyd as a social and cultural phenomenon.

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Appendix 1

Categorisation of the drawings and interjudgereliability.

Drawing No	Researcher	Judge 1	Judge 2	Differences
1	C	C	C	
2	C	C	C	
3	B	B	B	
4	C	D	C	X
5	A	B	B	X
6	A	A	A	
7	D	D	D	
8	A	A	A	
9	B	B	B	
10	A	A	A	
11	D	D	D	
12	A	A	A	
13	D	D	D	
14	B	B	B	
15	B	B	B	
16	B	B	B	
17	A	B	A	X
18	B	B	B	
19	B	B	B	
20	B	B	B	
Total:				3

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